

Appl. No. 10/781,613
Atty. Docket No. CM2603CQ
Amdt. dated June 10, 2005
Reply to Office Action of March 11, 2005
Customer No. 27752

REMARKS

Claims 1-12 were rejected.

Claims 1 and 10 have been amended to more specifically characterize the present invention. Support for these amendments is found in the specification. It is believed these changes do not involve any introduction of new matter. Consequently, entry of these changes is believed to be in order and is respectfully requested.

Claims 1-12 remain in the present application.

Rejection Under 35 USC §112, First Paragraph

The Office Action states that claims 10-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. More specifically:

Regarding claims 10-12, the specification discloses on page 2, lines 20-25 "One way to improve the integrity of a nonwoven web is to increase the amount of bonding of the constituent fibers. For example, a nonwoven web can be bonded to a backing layer in known ways, such that constituent fibers are bonded, or anchored to the backing layer. By increasing the bond area, more fibers can be anchored to the backing. However, increasing the bond area also increases the number of fibers that are not available for hook engagement. At 100% bond coverage, for example, each fiber would be anchored to avoid pulling away from the web, but there would be no fibers available for hook engagement."

It is not understood why there wouldn't be any fibers for hook engagement? The hook element of the hook and loop fastener is an open hook that engages the loop of the loop element whether that loop is bonded to a backing layer or is hanging free from the backing layer. Either way, the hook can engage the loop, Please clarify.

The specification on page 11 reinforces my question. On page 11, lines 17-21, the specification discloses "FIG. 2 shows one embodiment of a loop member 100 of the present invention. As shown, a nonwoven web 105 comprises a pattern of intersecting bond lines 110. The pattern of intersecting bond lines 110 serve to anchor the constituent fibers of nonwoven web 105 such that they offer more resistance to being pulled out when subjected to the forces of a mating hook element being disengaged. The pattern of intersecting bond lines 110 also serves to aid in increasing the shear forces required to unfasten a mating hook element by providing for limits on the lateral movement (i.e., parallel to the plane of the page of FIG. 2) of an engaged hook along the hooked fiber(s)."

This passage states that the fibers of nonwoven web, which are bonded to the backing web via bond lines, offer more resistance to being pulled out when subjected to the forces of a mating hook element being disengaged. Clearly, this shows that the hook elements can engage bonded nonwoven fibers of the web 105. One part of the specification states that the bonded fibers cannot be engaged by the hooks and the other portion of the

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specification states that it is desirable to have more bonded fibers to be engaged by the hooks to aid in increasing the shear forces required to unfasten the mating hook element.

In a third section of the specification, page 12, lines 19-24,

"As mentioned, one way to increase nonwoven web integrity (i.e., its resistance to constituent fibers from pulling loose) and thereby to increase the reliability of a loop fastening element, is to simply increase the number of straight bond lines in an intersecting pattern. However, doing so correspondingly increases the bond area and consequently decreases the quantity of fibers available for engaging with hook elements."

This passage is stating that an increase in the reliability of a loop fastening element is directly proportional to an increase in the number of bond lines. However, it also states that increasing the bond area decreases the quantity of fibers available for engaging with hook elements. This seems to contradict the previously cited passage, i.e., the hooks can engage fibers that have been bonded to the adhesive lines. Please provide clarification.

Next, the specification discloses on page 15, first paragraph,

"In prior art nonwoven loop fasteners, higher nonwoven integrity was achieved by adding bond lines, while attempting to balance the needs of web integrity with the need to have a certain minimum number of fibers available for hook engagement. However, the increase in linear bond lines simply results in a directly proportional increase in contour. That is, in prior art linear bond patterns an increase in bond area was gained by a directly proportional gain in the number of anchored fibers. But since the overall bond area increased, such an increase in linear bond lines simply resulted in a directly proportional loss in total fibers available for engaging. This technical contradiction has been solved by the pattern of the present invention. Specifically, by the pattern of the present invention, the number of fibers anchored can be increased by increasing the contour, while not directly proportionally increasing overall bond area that reduces the number of fibers available for engaging hook members."

The above paragraph seems to contradict what applicant has shown in table 1. Table 1 shows applicant's tessellated pattern of adhesive contour and bond area per square centimeter. The table shows that an increase in the amplitude of the wave of adhesive pattern leads to a proportional increase in the contour per square centimeter and a proportional increase in the bond area, which the specification has disclosed in the previously cited paragraph as not being a desirable outcome. It is not clear what applicant is describing as the inventive feature. On the one hand, the disclosure states that it is undesirable to increase the bond area in proportion to an increase in the contour. However, table 1 shows just such a relationship exists, i.e., an increase in contour results in an increase in bond area. Please clarify and distinguish what the invention is. It appears that the increase in the number of straight lines obtains the exact same result as applicant's invention, i.e., an increase in contour leads to an increase in bond area.

Applicants respectfully assert that the apparent misunderstandings of the Examiner are in fact mostly correct understandings. More specifically, the Examiner notes that an increase in bond area results in an increase in loop integrity. Said differently, as the number of fibers which are adhered to a backing layer is increased, the loop structure has more loop integrity in that it resists being pulled upon (e.g., disengagement of the hooks). Such an understanding is actually correct. Additionally, the Examiner notes that with the increase of bond area, the amount of unbonded area is decreased such that the number of available fibers for engagement is also decreased. This

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understanding is also correct. It is this competing interest, and apparent contradictions, which is the focal point of the present invention. Moreover, Applicants respectfully assert that the present invention seeks to increase the "contour" (the linear distance measured along the inner line edge 151 which is located along the inside perimeter of nonlinear segment 150). By increasing the contour, it has been discovered that the number of fibers that are both partially bonded and partially available for engagement is increased. Applicants respectfully direct the Examiner's attention to Figure 8 wherein it is shown that an increase in amplitude results in a greater increase of contour than that of total bond area. It is this unique relationship that led to the novel discovery of the present invention.

Rejection Under 35 USC §102(b) Over Stumpf

The Office Action states that claims 1-4 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Stumpf, 3687754. More specifically:

"Regarding claims 1-4 and 10-12, Stumpf, 3687754, discloses a loop member (see abstract) capable of being used in a mechanical hook and loop fastener. The loop member comprising a non-woven web (14) attached to a tessellating pattern of adhesive (col. 13, lines 60-end, figures 4,5, and 31), i.e., a first set of sinusoidal lines of adhesive extending parallel to one another and a second set of sinusoidal lines of adhesive criss-crossing the first set (80, figure 31). Stumpf discloses that the bond lines and non-woven material can be assembled into a roll and later used (col. 6, lines 16-22) in the formation of another product."

The subject Office Action relies upon Stumpf for the teaching of intersecting bond lines as illustrated in Figure 31. Applicants respectfully assert that the Stumpf reference is directed to the manufacturing of an elastic nonwoven fabric. More specifically, Stumpf is concerned with providing an elastic nonwoven fabric that is not significantly impaired by the addition of adhesive (see column 3, lines 41 through 57). On the contrary, the focus of the present invention is not to provide an elastic nonwoven fabric, to do so would be to provide a loop material that does not have sufficient CD integrity for its intended purpose as a female fastener on a disposable diaper. Rather, the loop material of the present invention must provide both sufficient CD integrity and sufficient hook engagement while under typical shear forces. Applicants have herein amended their claims to include an exemplary technique for achieving said CD integrity.

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Rejection Under 35 USC §103(a) Over Stumpf in view of Romanek

The Office Action states that claims 5-7 have been rejected under 35 USC §103(a) as being unpatentable over Stumpf U.S. Patent No. 3,687,754 in view of Romanek U.S. Patent No. 4,446,189. More specifically:

Regarding claims 5 and 6, Stumpf discloses a sinusoidal wave pattern of adhesive in phase with each line (figure 31), but fails to disclose a wave pattern 180 degrees out of phase with each adjacent line.

Romanek discloses a sinusoidal wave pattern of bonding that is 180 degrees out of phase with each adjacent line of bonding (figure 14) and a sinusoidal wave pattern of bonding in phase with each adjacent line of bonding (figure 9). It is concluded that Romanek discloses that either type of wave pattern can be used to attach the webs to each other equally as well as the other.

It would have been an obvious choice in alternative design to use the out-of-phase wave pattern of bonding, as taught by Romanek, in place of Stumpf's in-phase wave pattern of bonding for the reasons indicated above.

Regarding claim 7, Romanek discloses the use of cardable fibers as the nonwoven web material (col. 8, line 15). Therefore, it would have been an obvious design choice to use old and well known materials, such as cardable staple type fibers, in place of Stumpf's fibers since either material performs the identical function of providing loops in a nonwoven web equally as well as the other and since the specification has failed to disclose any criticality with use of the specific nonwoven webs (see page 10, lines 28-29).

In order to establish a *prima facie* case of obviousness, three requirements must be met. MPEP §2143. First, there must be some suggestion or motivation, either in the cited references or in the knowledge generally available to one ordinarily skilled in the art, to modify the reference. *Id.* Second, there must be some reasonable expectation of success. *Id.* Third, the cited references must teach or suggest all of the claim limitations. *Id.* The Office Action has failed to establish a *prima facie* case of obviousness because there is no motivation to modify the cited reference and the cited reference fails to teach or suggest all of the claim limitations of the claimed invention.

First, there is no motivation to modify the Stumpf reference. The Office Action states that the Stumpf discloses a sinusoidal wave pattern of adhesive in phase with each line (figure 31), but fails to disclose a wave pattern 180 degrees out of phase with each adjacent line. However, the Office Action alleges that because Stumpf teaches intersecting sinusoidal, that it would have been obvious to one of ordinary skill in the art to modify the bond lines such that they are 180 degrees out of phase with each adjacent line.

The MPEP section 2143.01 states that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior

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art also suggests the desirability of the combination. (*citing* *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)). In the *Mills* case, the claimed invention was directed toward an apparatus for producing an aerated cementitious composition. *In re Mills*, 916 F.2d at 681. The composition was created by driving air into an output pump at a rate that was greater than the feed rate of the pump. *Id.* The cited prior art reference taught that the speed of the prime mover could be controlled by a variable speed transmission. *Id.* at 682. The court found that the teachings of the prior art reference were inadequate to establish a *prima facie* case of obviousness because the cited reference did not require the output pump to run at the claimed speed. *See Id.*

Similarly, the Stumpf reference teaches intersecting sinusoidal bond lines. However, Stumpf's disclosed bond patterns are in keeping with his objective of providing an elastic nonwoven fabric. Consequently, some bond patterns will not provide such elasticity; therefore, not all bond patterns will properly function. Because the Stumpf reference does not require or suggest such out-of-phase sinusoidal bond lines, there is no motivation to make the suggested modification. Further, Applicants respectfully believe that such an out-of-phase wave pattern would be contrary to the teachings of Stumpf since such a pattern would result in a relatively low elasticity as evidenced by its suitable use as a disposable diaper loop fastening element.

Because there is no motivation to modify the Stumpf reference, the Office Action has not established a *prima facie* case of obviousness against claims 5 and 6. Therefore, claims 5 and 6 are nonobvious over the cited reference and are therefore patentable. In addition, because claims 5-7 depend from newly-amended claim 1, Applicants respectfully assert that these dependent claims are equally allowable.

Rejection Under 35 USC §103(a) Over King in view of Stumpf

The Office Action states that Claims 1-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over King, 5595567, in view of Stumpf, '754. More specifically:

Regarding claims 1, 2, 3, 4 and 8-9, King discloses a loop member (37) bonded to a backing member (31) via a criss-cross pattern of adhesive (figures 2 and 3). King fails to disclose a tessellating pattern of intersecting sinusoidal waves of adhesive.

Stumpf, 3687754, discloses a loop member (see abstract) capable of being used in a mechanical hook and loop fastener. The loop member comprising a non-woven web (14) attached to a tessellating pattern of adhesive (col. 13, lines 60-end, figures 4, 5, and 31), i.e., a first set of sinusoidal lines of adhesive extending parallel to one another and a second set of sinusoidal lines of adhesive criss-crossing the first set (80, figure 31). Stumpf discloses that the bond lines and non-woven material can be assembled into a roll and later used (col. 6, lines 16-22) in the formation of another product.

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It would have been an obvious choice in design to substitute a sinusoidal wave pattern of adhesive, as taught by Stumpf, in place of King's straight line pattern of adhesive, since the specification fails to clearly and specifically state the criticality of having a sinusoidal pattern over a straight pattern and it appears that either pattern of adhesive works equally as well as the other.

Applicants respectfully assert that non-linear bond lines do not perform "equally as well" as straight lines; rather, non-linear bond lines work surprisingly better. Such difference is central to the understanding of the present invention. More specifically, non-linear bond lines provide an increase in "contour" without proportionally increasing total bond area. Increasing the contour in such a manner is the central focus of the present invention.

Conclusion

In light of the above remarks, it is requested that the Examiner reconsider and withdraw the rejection under 35 U.S.C. §112, §102 and §103. Early and favorable action in the case is respectfully requested.

This response represents an earnest effort to place the application in proper form and to distinguish the invention as now claimed from the applied references. In view of the foregoing, reconsideration of this application, entry of the amendments presented herein, and allowance of Claims 1-12 is respectfully requested.

Respectfully submitted,

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